

What is claimed is:

~~1. A system, comprising:~~

an input source providing a polygonal base mesh having a face; and

5 a computer analyzing the mesh and determining an identifier for the face comprising a base face identifier, a vertex index and a path to the face.

2. A system as recited in claim 1, wherein the identifier further comprises a level indicator indicating a subdivision level of the face.

10 3. A system as recited in claim 2, wherein the identifier is stored as a fixed bit integer.

4. A system as recited in claim 3, wherein said computer disregards leading zeros in the path responsive to the level when accessing the face using the identifier.

15 5. A system as recited in claim 1, wherein said computer determines a unique vertex name for a vertex of the face.

6. A storage as recited in claim 1, wherein said computer determines a unique edge name for an edge of the face.

~~7. A system as recited in claim 1, wherein the vertex index identifies a level one subdivision vertex of a zero level subdivision base mesh face corresponding to the face.~~

5 8. A system for providing unique names for faces and vertices in an hierarchical subdivision surface from which each face of a surface, each vertex of a surface and each edge of a surface can be unambiguously identified, said system comprising:

an input source providing a polygonal base mesh having a face; and

10 a computer analyzing the mesh, determining an identifier for the face, disregarding leading zeros in the path responsive to the level when accessing the face using the identifier, determining a unique vertex name for a vertex of the face, determining a unique edge name for an edge of the face, with the face comprising a base face identifier, a vertex index and a path to the face, with the vertex index identifying a level one subdivision vertex of a zero level subdivision base mesh face corresponding to the face, with the identifier comprising a level indicator indicating a subdivision level of the face and with the identifier stored as a fixed bit integer.

15 9. A method of determining a unique identifier for a face of a mesh in a subdivision surface, comprising:

determining a base mesh face;
determining a vertex index of the face; and
determining a path to the face.

20 10. A method as recited in claim 8, further comprising determining a subdivision level of the face.

25 11. A method of accessing a face of a mesh in a subdivision surface, comprising:

obtaining a face identifier including a base face index, a vertex index and a path to the face; and

~~traversing the path to the face using the base face index and~~
the vertex index.

5 12. A method as recited in claim 11, wherein the identifier includes a level and the traversing includes a number of repeated steps which number is responsive to the level.

10 13. A computer readable storage having a face name data structure providing an identifier for a subdivision surface face and controlling a computer comprising a base face identifier field, a vertex index field and a path field of a path to the surface face.

14. A storage as recited in claim 13, further comprising a level indicator indicating a subdivision level of the face.

15 15. A storage as recited in claim 13, further comprising a unique vertex name for a vertex of the face.

16. A storage as recited in claim 13, further comprising a unique edge name for an edge of the face.